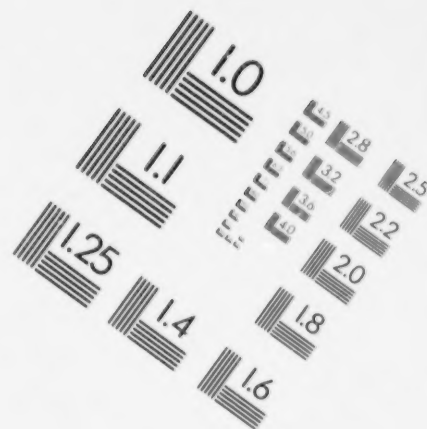
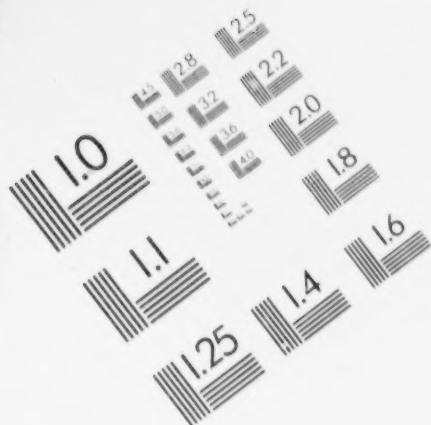


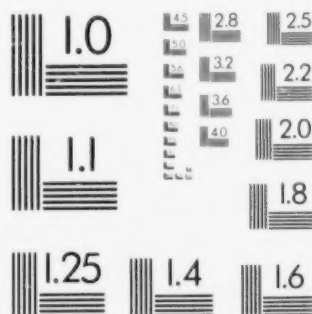
Film Identification



Readex

NewsBank, inc., Naples, FL 34103 USA

PRECISIONSM RESOLUTION TARGETS

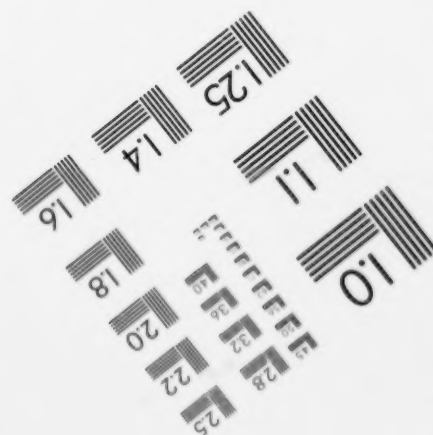
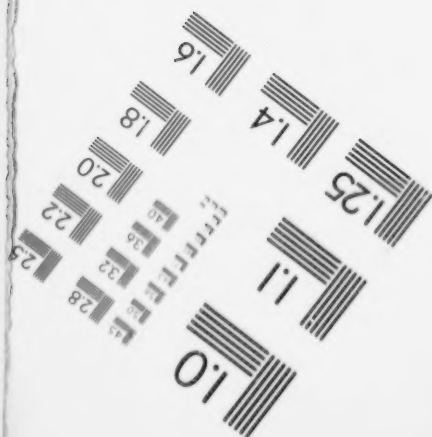


LEFT

RIGHT

150 MM

6"



PM-3 8½"x11" PHOTOGRAPHIC GENERAL TARGET
NBS 1010a ANSI/ISO #2 EQUIVALENT



UNEP/EA.1/4



Distr.: General

11 April 2014

Original: English



**United Nations
Environment Assembly of the
United Nations Environment
Programme**

United Nations Environment Assembly of the

United Nations Environment Programme

First session

Nairobi, 23–27 June 2014

Item 5 (a) of the provisional agenda*

Policy issues: state of the environment

State of the environment

Report of the Executive Director

Summary

The present report summarizes the key scientific and policy issues emanating from the assessment and early-warning activities of the United Nations Environment Programme (UNEP) that need to be brought to the attention of the United Nations Environment Assembly of the United Nations Environment Programme.

The issues are drawn from the findings of various integrated and thematic assessments conducted at the global and regional levels in response to the UNEP mandate of keeping under review the world environment situation. Other scientific findings have been referenced where appropriate. In particular, the report highlights the findings of the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

* UNEP/EA.1/1.

I. Background

1. The aim of the present report is to provide the United Nations Environment Assembly of the United Nations Environment Programme (UNEP) with an overview of recent scientific assessment findings, focusing on key policy issues at the global and regional levels, in accordance with the core mandate of UNEP to keep the world environmental situation under review.

2. It should be noted that, to inform its deliberations at its first session, the United Nations Environment Assembly will have before it a number of interrelated documents on various initiatives and processes related to the aforementioned core mandate. These include, in particular, the following documents:

(a) Report of the Executive Director on strengthening the science-policy interface (UNEP/EA.1/2/Add.1);

(b) Report of the Executive Director on support structures and processes for keeping the world environment situation under review, including progress on UNEP Live (UNEP/EA.1/4/Add.1);

(c) Note by the secretariat on the 2014 UNEP Year Book (UNEP/EA.1/2/INF/2);

(d) Note by the secretariat on the Eye on Earth initiative (UNEP/EA.1/2/INF/11);

(e) Note by the secretariat on the Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA) (UNEP/EA.1/2/INF/12);

(f) Note by the secretariat on the GEMS/Water Programme: status report and pathways to the future (UNEP/EA.1/2/INF/13);

(g) Note by the secretariat on proposed procedures to enhance future assessment processes (UNEP/EA.1/2/INF/14).

3. As the principal body for the environment in the United Nations system, UNEP has a mandate to keep the global environment and causes of environmental impacts under review. UNEP operates at the science-policy interface by ensuring that knowledge flows to and from a global network of knowledge into policy action for the benefit of societies. This knowledge is sourced from relevant communities of practice, research institutions and local, indigenous and traditional knowledge holders.

4. Assessments are the building blocks for keeping the world environment under review and provide a means of enabling policymakers to reach informed decisions. These assessments should be based on relevant, reliable and timely data and information and be peer-reviewed in keeping with the principles of sound science. The temporal, thematic and spatial coverage of assessments often lacks coherence, however, in that gaps exist in the assessment landscape in parallel with overlapping assessment processes, as assessments are conducted by various stakeholders.

5. UNEP must also respond to the challenges of poverty eradication and living within sustainable limits, emerging from accelerating global megatrends. This requires improved structural and social processes as part of a modern knowledge-based society to inform integrated goal-setting and the formulation of environmental policy targets across relevant spatial and temporal scales. It will build on inclusive knowledge production and management relying on broad and flexible stakeholder participation and partnerships. UNEP will use the synergies generated by interaction between the UNEP Live web-based platform, the integrated assessment processes and the sixth report in the Global Environment Outlook series (GEO-6) to provide relevant user-driven information on sustainable development with human well-being at the centre. As environmental change has an enormous impact on sustainable development, there is a pressing need for an integrated approach to goal-setting and implementation, and environmental sustainability must be embedded in the sustainable development goals.

II. Summary of findings of assessments conducted at the global, regional and subregional levels since the twenty-seventh session of the Governing Council/Global Ministerial Environment Forum

A. Global assessments

6. The terrestrial system provides the basis for all human societies and their economic activities. People need clean air to breathe, safe water to drink, healthy food to eat, energy to produce and transport goods, and natural resources that provide the raw materials for all these services. However, the activities of the 7.06 billion people alive today (compared with a world population of only 3.85 billion in 1972)¹ are intensifying stresses on the Earth's system beyond its capacity to absorb wastes and neutralize the adverse effects on the environment. In fact, the depletion and degradation of a number of key natural resources have already constrained conventional development in some parts of the world.

7. The fifth report in the UNEP Global Environment Outlook series, GEO-5,² and subsequent global assessments, show environmental degradation continuing worldwide. Critical thresholds across the globe, including in specific localities, have been exceeded or are close to being exceeded. These changes have been increasingly showing serious consequences for human well-being.

1. Climate change

8. Climate change presents the global community with one of the most serious challenges to achieving development goals. The potential impacts from climate change are unlikely to be avoided on the basis of current emission reduction pledges. Despite attempts to develop low-carbon economies in a number of countries, atmospheric concentrations of greenhouse gases continue to increase to levels likely to push global temperatures beyond the internationally agreed limit of 2°C above the pre-industrial average temperature. In 2013 and 2014, the Intergovernmental Panel on Climate Change (IPCC) released three components of its Fifth Assessment Report.

9. The report of IPCC Working Group I, entitled *Climate Change 2013: The Physical Science Basis*, provides a comprehensive update of the scientific understanding of the physical science basis of climate change and represents a firm foundation for consideration of the impacts of climate change on human and natural systems and ways of meeting the climate change challenge. The report reaches the following key conclusions:

(a) Warming of the climate system is indisputable and, since the 1950s, many of the changes observed over periods ranging from decades to millennia are without precedent. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, the sea level has risen, and the concentrations of greenhouse gases have increased;

(b) Total radiative forcing is positive, and has led to an uptake of energy by the climate system. The largest contribution to total radiative forcing is caused by the increase in the atmospheric concentration of carbon dioxide since 1750;

(c) Improved understanding of the climate system has demonstrated that these phenomena – increasing greenhouse gas concentrations in the atmosphere, positive radiative forcing and observed warming – are due to human influence;

(d) Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. Limiting climate change can only be achieved through substantial and sustained reductions of greenhouse gas emissions.

10. The IPCC Fifth Assessment Report also showed that the land and ocean surface temperature has increased globally by nearly 1°C since 1901 (reaching a global average of 0.89°C) mainly as a result of anthropogenic activities. In parts of Africa, Asia, North America and South America, however, surface temperatures rose by as much as 2.5°C between 1901 and 2012. Urban areas have also seen heightened temperature rise, as altered storage and transfer of heat, water and airflow lead to the formation of urban heat islands. A recent study demonstrates that, although a recent slowdown in surface warming has been observed, most likely as a result of cooling of the Pacific due to

¹ See UNEP Yearbook 2013, available at www.unep.org/pdf/uyb_2013_new.pdf.

² Available at www.unep.org/geo/pdfs/geo5/GEO5_report_full_en.pdf.

strengthening of trade winds, rapid warming is expected once wind trends abate.³ IPCC predicts that a global mean temperature change of between +0.3°C and +0.7°C is likely between 2016 and 2035.

11. In 2014, two additional components of the Fifth Assessment Report were issued, namely: the IPCC Working Group II contribution, entitled *Climate Change 2014: Impacts, Adaptation and Vulnerability*, released in March 2014, in Yokohama, Japan; and the IPCC Working Group III contribution, entitled *Climate Change 2014: Mitigation of Climate Change*, released in April 2014, in Berlin. The *Synthesis Report* is to be considered in Copenhagen in October 2014.

12. The report *Climate Change 2014: Impacts, Adaptation and Vulnerability* details the impacts of climate change to date, the future risks from a changing climate, and the opportunities for effective action to reduce risks. The following are some key conclusions of the report:

(a) Observed impacts of climate change have already affected agriculture, human health, ecosystems on land and in the oceans, water supplies and people's livelihoods. The impacts are being felt from the tropics to the poles, from small islands to large continents, and from the wealthiest countries to the poorest;

(b) Responding to climate change involves making choices about risks in a changing world. The nature of the risks of climate change is increasingly clear, though climate change will also continue to produce surprises;

(c) Adaptation in order to reduce the risks from a changing climate is now starting to occur, but with a stronger focus on reacting to past events than on preparing for a changing future;

(d) Future risks from a changing climate depend strongly on the level of future climate change. Increasing magnitudes of warming will also increase the likelihood of severe and pervasive impacts that may be surprising or irreversible.

13. The summary for policymakers of the Working Group III contribution to the Fifth Assessment Report was approved and its underlying scientific/technical assessment was accepted by member Governments at the twelfth session of the Working Group, held in Berlin from 7 to 11 April 2014. Working Group III concluded that:

(a) The concentration of greenhouse gases grew more quickly during the last decade than in each of the previous three decades. Carbon dioxide emissions from fossil fuel combustion and industrial processes contributed about 78 per cent of the total greenhouse gas emission increase from 1970 to 2010, with a similar percentage contribution for the period 2000–2010. Without additional efforts to reduce such emissions beyond those in place today, emissions growth is expected to persist, driven by growth in global population and economic activities;

(b) Mitigation scenarios in which it is likely that the temperature change caused by anthropogenic greenhouse gas emissions can be kept to less than 2°Celsius relative to pre-industrial levels are characterized by atmospheric concentrations of greenhouse gases in 2100 of about 450 parts per million carbon dioxide equivalent;

(c) To have a good chance of limiting the increase in global mean temperature to 2°C in this century will require that global greenhouse gas emissions be lowered by 40–70 per cent from 2010 levels by mid-century and to near-zero gigatons of carbon dioxide equivalent, or even lower, by the end of the century;

(d) Delaying mitigation efforts beyond those in place today through 2030 will probably increase substantially the difficulty of moving to low emissions levels in the long term and to narrow the range of options for maintaining temperature change below 2°C.

14. The Emissions Gap Report, an annual assessment of the adequacy of pledges by parties to the United Nations Framework Convention on Climate Change to keep the world on track to meet the 2°C target, is coordinated by UNEP and released as negotiators prepare to meet for the Conference of the Parties. The assessment is based on a host of new studies and brings new light to bear on the consequences of inaction. The *Emissions Gap Report 2013* was launched in Berlin and four other cities around the world on 5 November 2013.⁴ It was also presented to parties to the Framework Convention at two side events held during the nineteenth session of the Conference of the Parties, held in Warsaw from 11 to 22 November 2013.

³ Matthew H. England and others, "Recent intensification of wind-driven circulation in the Pacific and the ongoing warming hiatus", *Nature Climate Change*, vol. 4, pp. 222–227 (2014).

⁴ Beijing, Brussels, Rio de Janeiro and Washington, D.C.

15. The report⁵ estimates current global emissions at around 50 gigatons per year of equivalent carbon dioxide, which is substantially higher than the emissions level in 2020 should be if the 2°C climate target is to be met. If all pledges are fully implemented, the emissions gap in 2020 is estimated at between 8 and 12 gigatons of carbon dioxide equivalent. The report indicates, however, that this gap can be closed by a combination of actions within the Climate Convention and by stronger national and international measures, including by promoting sustainable agriculture practices, building rapid transit bus systems, legislating appliance standards and promoting international cooperative initiatives, aimed, for example, at energy efficiency, fossil fuel subsidy reform and the reduction of methane and other short-lived climate pollutants. The report also highlights the consequences of not closing the gap in 2020, which include the higher cost and greater lock-in of carbon intensive infrastructure, greater risks of economic disruption and greater risk of failing to meet the 2°C target.

16. The initial findings of the UNEP synthesis report on nitrous oxide, entitled *Drawing Down N₂O to Protect Climate and the Ozone Layer*, were presented at a side event on 24 October 2013 at the Twenty-Fifth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer in Bangkok, and the full report was launched on 21 November 2013 at the nineteenth session of the Framework Convention on Climate Change in Warsaw. The report, which is aimed at informing policymakers and stakeholders about the impacts of nitrous oxide emissions on climate and the ozone layer and to present available opportunities for reducing emissions, shows that the continued build-up of nitrous oxide in the atmosphere will make it more difficult to achieve climate targets and will to a certain extent undermine the achievements of the Montreal Protocol in restoring the ozone layer. At the same time, however, it shows that nitrous oxide emissions can be reduced by boosting nitrogen use efficiency in the agricultural sector (making more efficient use of fertilizer, manure, and feed), installing nitrous oxide abatement technologies in nitric and adipic acid facilities in the industrial sector, reducing biomass burning, improving the fuel and combustion efficiency of household stoves, by improving the collection and treatment of wastewater and by other measures in aquaculture processes.

17. According to the report,⁶ reducing emissions of nitrous oxide would not only produce benefits for climate and the ozone layer, but would also bring the added benefits of higher agricultural productivity, lower required agricultural inputs and a reduction in the air and water pollution associated with the release of excess nitrogen into the environment.

18. On 9 May 2013, the daily mean concentration of atmospheric carbon dioxide exceeded 400 parts per million (ppm) – the highest recorded level since measurements began at Mauna Loa Observatory in Hawaii, United States of America, in 1958. Since then, seasonally corrected monthly mean concentrations of carbon dioxide have continued to rise.

19. Application of current low-carbon technologies and existing policy options would reduce the risks posed by climate change but, ultimately, a transformation in the way energy is produced and the efficiency with which energy and other resources are used, coupled with a shift in consumption and production patterns and investment in innovation, will be required to achieve long-term climate goals.

2. Energy

20. Today, renewable energy production accounts for approximately 13 per cent of the global primary energy demand. Despite an overall decline in clean energy investments for 2013,⁷ total installed capacity of solar photovoltaic energy increased by 43 per cent in 2013, according to the International Energy Agency's 2013 report,⁸ and the share of renewables in primary energy use is predicted to rise to 18 per cent in 2035. The Agency reports that global bioenergy resources are more than sufficient to meet projected demand without competing with food production but cautions that managing the required land-use and implications for biodiversity will require careful planning.

3. Disasters

21. Since the start of the new millennium, 47 major conflicts and a total of 2,678 disasters have affected millions of people around the world.⁹ These crises have destroyed infrastructure, displaced entire populations and threatened the ecosystems that support the lives of many. The impacts of these

⁵ The main messages, findings and response options contained in the report are available at the following link: www.unep.org/publications/ebooks/emissionsgapreport2013.

⁶ The main messages, findings and response options contained in the report are available at the following link: www.unep.org/publications/ebooks/UNEPN2Oreport.

⁷ See www.unep.org/pdf/GTR-UNEP-FS-BNEF2.pdf.

⁸ See chapter 6 of the World Energy Outlook 2013 at www.worldenergyoutlook.org/publications/weo-2013.

⁹ See EM-DAT: the OFDA/CRED International Disaster Database at www.emdat.be/database.

crises have been disproportionately borne by the most vulnerable sectors of society, affecting livelihoods and compounding poverty.

22. Early in 2014, a number of countries have been affected by extreme weather events. The Plurinational State of Bolivia and the United Kingdom of Great Britain and Northern Ireland have experienced severe flooding, which has caused infrastructure damage and the displacement of people. Heavy snowstorms and unusually low temperatures have hit Japan and the United States of America, with cold fronts reaching much lower latitudes.

4. Ecosystems

23. The current trends in the state of our ecosystems are undermining our ability to tackle poverty, improve the health, prosperity and security of our populations, and deal with climate change, and each of these will be greatly strengthened if we correctly value the role of biodiversity in supporting the shared priorities of the international community. We can no longer see the continued loss of and changes to biodiversity as an issue separate from the core concerns of society. Substantial loss of biodiversity and the degradation and over-exploitation of habitats have already affected the provision of ecosystem functions and services, such as water regulation, and have led to the collapse of a number of fisheries. According to the fifth report in the Global Environment Outlook series (GEO-5) the number of eutrophic coastal areas has increased dramatically since 1990 – at least 415 coastal areas have exhibited serious eutrophication and only 13 of these are recovering.

24. The current trends in economic development are based on unsustainable linear economic growth, which has come at the expense of equity, natural resources and ecosystems. Many terrestrial ecosystems are being severely degraded because of the lack of proper long-term policies that address land-use decisions. Development measures often fail to recognize non-economic ecosystem functions that limit productivity and long-term ecosystem sustainability. For example, short-term financial pressures have encouraged the irrigation and subsequent salinization of vast dryland areas, making them very costly to rehabilitate for the present and future populations. Deforestation and forest degradation produce financially attractive short-term profits, but estimates prepared under the Economics of Ecosystems and Biodiversity initiative (TEEB), based on alternative accounting methods, suggest that they are costing the global economy between \$2 trillion and \$4.5 trillion a year¹⁰ – more than the losses of the 2008 economic crisis.

5. Forests

25. While the rate of forest loss is slowing, it remains alarmingly high with annual forest lost, between 2000 and 2010, measured at approximately 13 million hectares.¹¹ A recent global mapping of forest cover¹² reports a loss of 2.3 million square kilometres and gain of only 0.8 million square kilometres from 2000 to 2012, with the tropics experiencing the greatest total loss, of 2101 square kilometres per year. Heightened interest in carbon sequestration has inspired new incentives and financing for ecosystem protection. One such opportunity – the mechanism to reduce emissions from deforestation and forest degradation in developing countries (REDD) – has emerged as an important component of a global strategy to reduce emissions while generating financial flows from North to South.

6. Food security and land

26. Food insecurity and land degradation will intensify unless increasing pressures and competing demands on land are wisely managed. Meeting this challenge will require the adoption of new economic paradigms that explicitly factor in the environment. Options leading towards a green economy¹³ represent one such approach, which includes the principles: valuation of natural resources and environmental assets; pricing policies and regulatory mechanisms that translate these values into market and non-market incentives; and measures of economic welfare growth that are responsive to use, degradation, and loss of ecosystem goods and services. The 2013 publication entitled *Smallholders, Food Security, and the Environment*¹⁴ reports that supporting smallholder farmers to play a greater role in food production and natural resource stewardship offers one of the quickest ways of lifting over 1 billion people out of poverty and sustainably nourishing a growing world population.

¹⁰ For example, see www.unep.org/pdf/OP_sept2010/EN/OP-2010-09-EN-FULLVERSION.pdf.

¹¹ See www.fao.org/docrep/013/i1757e/i1757e.pdf.

¹² See www.sciencemag.org/content/342/6160/850.

¹³ See the UNEP green economy initiatives (GEI) at www.unep.org/greeneconomy.

¹⁴ See www.unep.org/greeneconomy.

27. The 2014 report of the International Resource Panel, entitled *Assessing Global Land Use: Balancing Consumption with Sustainable Supply*,¹⁵ points out that up to 849 million hectares of natural land – nearly the size of Brazil – may be degraded by 2050 should current trends of unsustainable land use continue. As much as 319 million hectares of land can be saved by 2050, if the world follows a combination of measures designed to keep cropland expansion within the so-called “safe operating space” that include improving land management and land-use planning in order to minimize the expansion of built-up land on fertile soils, improving agricultural production practices to increase intensification in an ecologically and socially acceptable way, improving efficiency along the whole food chain by increasing crop yields through research and extension, and reducing food waste and spoilage by improving the transport, storage and distribution infrastructure in developing countries and by changing behaviour in wealthier societies where much food waste occurs and where a shift towards more vegetable-heavy diets will also be crucial to improving food security. It will also be necessary to reduce the subsidization of fuel crops – including the reduction and phase-out of biofuel quotas in consuming countries.

28. The report also explores how the management of land-based biomass production and consumption can be elevated towards a higher degree of sustainability across different scales: from the sustainable management of soils in the field to the sustainable management of global land use as a whole. A central question posed by the authors is to what extent global cropland can expand to serve the growing demand for food and non-food biomass, while keeping the consequences of land-use change, such as losses of biodiversity, at a tolerable level. Over the last five decades, the area used for agriculture has been expanding at the expense of forests, in particular in tropical regions. On average, 13 million hectares per year have been deforested, with significant impacts on biodiversity as well. Around 23 per cent of global soils are estimated to have been degraded. The current trends of cropland expansion, land degradation, yield stagnation, nutrient pollution and large-scale land acquisition show the urgent need to improve the management of land resources. Measures to improve productivity will not be enough to maintain sustainable levels of land use in the future but the combination of consumption-oriented measures with improved land management and restoration of degraded land may enable us to save between 161 and 319 million hectares of land by 2050.

7. Fresh water

29. Up to 90 per cent of all wastewater in developing countries flows untreated into rivers, lakes and highly productive coastal zones, threatening health, food security and access to safe drinking and bathing water.¹⁶ The cumulative impacts of excessive, illegal or unregulated wastewater discharges are particularly damaging to coastal areas, since these contain some of the world’s most productive yet fragile ecosystems. The pace of increasing demands on freshwater and ocean resources must be matched by improved governance. The open oceans are a major global commons and require effective international cooperation and governance. Most human and environmental water problems result from inadequate governance involving policy, institutional, financial and stakeholder issues. Integrated management approaches to these constraints require time and resources if they are to succeed. They need the enhanced integration of policies and institutions between sectors and governance levels, implementation and enforcement of relevant agreements and goals, and improved monitoring and resolution of transboundary issues. Good governance, including stakeholder and private sector participation and gender considerations, is critical to increasing social and environmental resilience and sustainability.

8. Coastal and marine resources

30. The many challenges facing coral reefs were highlighted in the 2012 UNEP Foresight Process on emerging environmental issues for the twenty-first century. One fifth of the world’s coral reefs have been lost, and more than 60 per cent are under immediate and direct threat from over-harvesting, pollution arising from land-based activities, including nutrients, sediments, and sewage, and physical alteration and destruction of habitat as a result of poorly managed coastal development.¹⁷ Invasive alien species constitute a further grave threat, as illustrated by the introduction of Indo-Pacific lionfish

¹⁵ See [www.unep.org/resourcepanel/Portals/24102/PDFs/Full_Report-Assessing_Global_Land_UseEnglish_\(PDF\).pdf](http://www.unep.org/resourcepanel/Portals/24102/PDFs/Full_Report-Assessing_Global_Land_UseEnglish_(PDF).pdf).

¹⁶ See www.unep.org/pdf/SickWater_screen.pdf.

¹⁷ C. Wilkinson (ed.) (2008), *Status of Coral Reefs of the World 2008*, available at http://germn.org/?post_type=germn-publication&p=153; Burke and others (2011), *Reefs at Risk Revisited*, available at www.wri.org/publication/reefs-risk-revisited.

to the Caribbean.¹⁸ This undermines the integrity and service provision of coral reefs and threatens food security, the health and well-being of coastal people, and the economies of many countries. It also reduces the ability to withstand and adapt to increasing climate change. Repeated coral bleaching (a stress response caused by above-average sea surface temperatures that can lead to mortality) has been recorded in most regions since the mass mortality in 1998. While strong recovery has been seen in some areas where direct stress is low,¹⁹ recovery is stalled or weak where there are substantial human pressures.

31. Evidence is also beginning to emerge of coral sensitivity to ocean acidification, with decline in coral calcification rates and potentially significant ecological and economic implications. Recent detailed analysis of long-term coral reef data in the Caribbean²⁰ shows that, while Caribbean live coral cover overall has seen drastic decline in the past 40 years, there is enormous variability among reef locations. Coral abundance today is strongly correlated with the history of overfishing and abundance of the sea urchin *Diadema antillarum* prior to its mass mortality in 1983–1984, whereas the correlation with the incidence of hurricanes or outbreaks of coral bleaching and disease is weaker. This provides further evidence that ecosystem management has a significant impact on the condition of coral reefs during climate change too. Ensuring the continued provision of coral reef ecosystem services requires ecosystem-based management that addresses multiple threats in an integrated manner and builds resilience in the face of climate change, including through the enhanced policy application of assessments of coral reef status and trends and also through ecosystem service values.

32. The largest ever under-ice algal bloom was recorded in the Arctic in 2012 by the National Aeronautics and Space Administration (NASA) of the United States of America, under its multi-year ship-borne project on the impacts of climate on the ecosystems and chemistry of the Arctic Pacific environment (ICESCAPE). Since then many other related phenomena have been observed.²¹ The key driver of under-ice algal blooms is thought to be climate change, via its impact on the thinning of sea ice and surface meltwater, which allows higher light penetration into under-ice waters, leading to much greater phytoplankton densities than expected. Changes in river discharge patterns and the concentration of nutrients entering Arctic waters from land are also likely to reinforce this phenomenon in future, in particular in coastal areas. Although the effects of algal blooms on Arctic ecosystems are yet to be studied in detail, food chains involving migratory species of mammals, birds and fish, together with species affected by oxygen conditions on the sea bottom, are likely to change. Decreases in the extent and thickness of sea ice are thought to be an driving force behind marine and terrestrial ecological dynamics, influencing productivity, species interactions, population mixing, gene flow and pathogen and disease transmission.

33. UNEP, as part of its function as secretariat for the Global Partnership on Marine Litter, has been paying particular attention to the emerging issue of microplastics. Plastic debris may enter the ocean directly, or it may find its way there via other water bodies or the atmosphere. The key to stemming flows of plastic debris into the ocean is to prevent this debris entering the environment. Based on the limited data available, there appears to have been a significant increase in concentrations of microplastics in surface waters of the ocean over the past four decades. A large number of plastic materials are currently being applied in personal care and cosmetic products for a variety of purposes. They tend not to be filtered out during sewage treatment, but released directly into the ocean or other water bodies such as lakes and rivers.

34. Across the world, recent scientific meta-analyses of carbon sequestration and storage in coastal ecosystems have estimated that carbon dioxide emissions from the degradation and clearing of coastal ecosystems are significant. Between some 0.15 and 1.02 Pg (billion tons) of carbon dioxide are being

¹⁸ Gómez Lozano and others (2012), *Regional Strategy for the Control of Invasive Lionfish in the Wider Caribbean*, available from www.icriforum.org/icri-documents/icri-publications-reports-and-posters/lionfish_strategy

¹⁹ C. Wilkinson (ed.) (2008), *Status of Coral Reefs of the World 2008*, available at http://gcrmn.org/?post_type=gcrmn-publication&p=153; Burke and others (2011), *Reefs at Risk Revisited*, available at www.wri.org/publication/reefs-risk-revisited.

²⁰ Jackson and others, *Status and Trends of Caribbean Coral Reefs 1969–2012* (Global Coral Reef Monitoring Network (GCRMN), International Union for Conservation of Nature (IUCN), International Coral Reef Initiative (ICRI), UNEP) (in press).

²¹ See “Massive phytoplankton blooms under Arctic sea ice” (DOI: 10.1126/science.1215065, Arrigo and others, 2012); “Ecological consequences of sea-ice decline” (DOI: 10.1126/science.1235225, Post and others, 2013); “Export of algal biomass from the melting Arctic sea ice” (DOI: 10.1126/science.1231346, Boetius and others, 2013).

released annually, equivalent to 3–19 per cent of those from deforestation globally, and these result in economic damage costing between \$6 billion and \$42 billion annually.²²

9. Chemicals

35. The way in which the world manages chemicals will play a key role in the transition to an inclusive green economy and the realization of a sustainable twenty-first century. The *2013 Global Chemicals Outlook*²³ draws attention to the increasing production and consumption of chemicals currently occurring in developing countries and countries with economies in transition. Detailed data on waste are lacking because of the absence of pollution release and transfer registries in developing and transition countries. The increasing production, use and disposal of chemicals have significant implications for the environment and human health. Effects on ecosystem resources include the contamination of air, water, and soil, with adverse impacts on food sources and wildlife, together with human health effects. In this context, it is necessary to consider policy approaches to ensure that chemicals are produced and used in ways that minimize impacts on health and the environment. Failure to adopt sound chemicals management can entail massive economic costs and, conversely, sound chemicals management can yield significant economic benefits in terms of economic development, poverty reduction and, crucially, reduced risks to human health and the environment.

36. Effective management of these issues can be achieved by further promoting synergies among multilateral environmental agreements in terms of administrative, logistical and programme integration; strengthening international and national chemical control activities, including through legislation to address gaps in the current chemicals-related multilateral environmental agreements; mainstreaming sound chemicals management into multilateral and bilateral economic assistance programmes; and fostering public-private partnerships to promote the implementation of sound chemical management policies and strategies as a contribution to economic development plans and processes.

10. Resource efficiency

37. The global use of natural resource materials increased by over 40 per cent between 1992 and 2005, from about 42 billion to nearly 60 billion tons.²⁴ On a per capita basis, this represented an increase of 27 per cent. Among the four major material groups (biomass, fossil fuels, ores and industrial minerals, and construction minerals) there has been a major increase – some 80 per cent – in the extraction of construction minerals, followed by an increase of close to 60 per cent in that of ores and industrial minerals. The global primary production of metals accounts for a large share, measuring between 7 and 8 per cent, of the world's total energy use and causes severe local environmental impacts. A continued global rise in metals demand is currently predicted for the decades ahead, as a consequence of urbanization and the building of infrastructure in developing countries that will further increase the environmental impacts of metal production.²⁵ What economies worldwide need is the absolute decoupling of the environmental pressure associated with resource consumption from economic growth. This will be easier to achieve to the extent that resource use itself becomes more efficient.

11. Nutrients

38. In 2013, the Global Partnership on Nutrient Management released a global overview of nutrient management entitled *Our Nutrient World: The challenge to produce more food and energy with less pollution*.²⁶ The overview highlights the manner in which humans have massively altered the natural flows of nitrogen, phosphorus and other nutrients and caused a web of water and air pollution that is damaging human health, causing toxic algal blooms, killing fish, threatening sensitive ecosystems and contributing to climate change. Since the 1960s, human use of synthetic nitrogen fertilizers has increased ninefold globally, while phosphorus use has tripled. A further substantial increase, of between 40 and 50 per cent, is expected over the next 40 years, driven by the need to feed the growing world population and by current trends in dietary lifestyles, with the increasing consumption of animal products. These changes will exacerbate current environmental problems

²² Pendleton and others, "Estimating global 'blue carbon' emissions from conversion and degradation of vegetated coastal ecosystems", PLoS ONE, vol. 7, issue 9, September 2012.

²³ See http://www.unep.org/chemicalsandwaste/Portals/9/Mainstreaming/GCO/The%20Global%20Chemical%20Outlook_Full%20report_15Feb2013.pdf.

²⁴ www.unep.org/gco/pdfs/keeping_track.pdf.

²⁵ See the 2013 International Resource Panel (IRP) report, available at www.unep.org/resourcepanel/Publications/EnvironmentalChallengesMetals/tabid/106142/Default.aspx.

²⁶ www.gpa.unep.org/index.php/global-partnership-on-nutrient-management/publications-and-resources/global-partnership-on-nutrient-management-gpnm/143-our-nutrient-world.

unless urgent action is taken to improve the efficiency of nitrogen and phosphorus use and to re-evaluate future per capita food consumption patterns.

39. The efficiency of nutrient use is very low. On average, over 80 per cent of the nitrogen and between 25 and 75 per cent of the phosphorus consumed end up being lost into the environment, wasting the energy used to prepare them and causing pollution through emissions of the greenhouse gases nitrous oxide and ammonia into the atmosphere, plus losses of nitrate, phosphate and organic nitrogen and phosphorus compounds into water. A 20 per cent improvement in nutrient use efficiency by 2020 would reduce the annual use of nitrogen fertilizer by 20 million tons, which could provide a net saving of around £110 billion (approximately \$200 billion) per year.

40. There is an urgent need to develop joined-up approaches that optimize the planet's nutrient cycles for delivery of our food and energy needs, while reducing threats to social and economic wellbeing, including threats to climate, ecosystem services and human health. This set of multiple connections may be termed the "nutrient nexus", where good nutrient management can be seen as making a vital contribution to all global change challenges. The consequences of not taking action include further global warming effects from increasing atmospheric nitrous oxide (a greenhouse gas which, in terms of radioactive effect, is 300 times more reactive than carbon dioxide), the continuing deterioration of water, air and soil quality, the shortening of human life, and threats to ecosystem services and biodiversity. The full damage cost has not yet been assessed, but the annual global loss of ecosystem services, including damage to fisheries from coastal nitrogen and phosphorus pollution-related hypoxia, alone costs an estimated \$170 billion. Making better use of nutrients will reduce these pollution threats, while improving food and energy production.

B. Regional assessments

41. Assessments conducted at the regional level are usually carried out in response to the mandates imposed by regional forums such as the African Ministerial Conference on the Environment (AMCEN) or the Council of Arab Ministers Responsible for the Environment (CAMRE). In addition to addressing regional issues, the findings of such assessments also support global assessment processes. The assessment cycle for regional assessments can vary from three years (Africa) to five years (Europe). Some regional and subregional assessments, however, are carried out on a one-off basis.

1. Africa

42. The third report in the Africa Environment Outlook series (AEO-3)²⁷ was launched on 17 October 2013 during the fifth special session of AMCEN. The report reveals that 28 per cent of Africa's disease burden is directly related to the decline in environmental integrity. Diarrhoea, respiratory infections, and malaria account for 60 per cent of all known environmentally related diseases in the region. AEO-3 draws on the latest data available on air quality, biodiversity, chemicals and waste, climate change, freshwater and sanitation and land, while emphasizing the need to update existing data on linkages between health and the environment in Africa.

43. The report *Adaptation to Climate-Change Induced Water Stress in the Nile Basin: A Vulnerability Assessment Report*²⁸ was launched on 4 September 2013 in Stockholm, during World Water Week. Climate change-induced water stress is a growing concern in the Nile basin, which provides vital resources to 238 million people in 11 countries, but risks can be reduced through building adaptation strategies into development policy, boosting transboundary cooperation and improving available data on future water availability.

2. Asia and the Pacific

44. The report entitled *Recent Trends in Material Flows and Resource Productivity in Asia and the Pacific*²⁹ was released on 24 April 2013 at the Asian and Pacific regional implementation meeting on the outcomes of the United Nations Conference on Sustainable Development, as a special contribution to the regional deliberations of its follow-up actions to the Conference. The report covers the period including the onset of the global financial crisis, and concludes that the Asian and Pacific region has surpassed the rest of the world in its consumption of materials and will continue to dominate world material flows. The region's trade balance indicates that the current rate of exploitation of its resource base is no longer sufficient to support the region's fast-growing economies and changing lifestyles.

²⁷ The main messages, findings and response options contained in the report are available at the following link: www.unep.org/pdf/aco3.pdf.

²⁸ The main messages, findings and response options contained in the report are available at the following link: www.unep.org/dewa/Portals/67/pdf/Nile_Basin.pdf.

²⁹ See [www.unep.org/pdf/RecentTrendsAP\(FinalFeb2013\).pdf](http://www.unep.org/pdf/RecentTrendsAP(FinalFeb2013).pdf).

Over the period from 1970 to 2008, the consumption of construction minerals increased 13.4 times, that of metal ores and industrial minerals 8.6 times, that of fossil fuels 5.4 times, and that of biomass 2.7 times. The data indicate that, at this rate, the region will be increasingly dependent on imports and unable to sustain its economies and lifestyles. The report emphasizes that the Asian and Pacific region still has ample opportunity to effect a transition of its current economic growth patterns towards green growth, and to transform its economies into truly green economies, despite the greater challenges faced by member countries.

45. Under the auspices of the South Asian Association for Regional Cooperation, UNEP collaborated with regional institutions and member countries to develop the South Asia Environment Outlook for 2013 and 2014. The South Asia subregion encompasses eight countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. The report undertakes to analyse environmental challenges and priorities in the context of human development and economic growth issues at both regional and national levels. It will also review the interlinkages between environmental priorities, such as climate change, land degradation, air and water pollution and the loss of biodiversity, and the drivers of environmental change such as urbanization, economic growth and unsustainable consumption. Various policy and institutional options catering to the emerging challenges of the subregion will be developed.

3. Europe

46. The report entitled *Resource Efficiency: Economics and Outlook for Eastern Europe, the Caucasus and Central Asia*, one of a series of UNEP studies following a similar analytic methodology, to be released in 2014, will provide a deeper understanding of the underlying causes of resource efficiency issues in this large and rapidly evolving region. The report will provide a detailed analysis of material flows and resource efficiency at both the country and the regional levels; a close examination of water use and efficiency in the region; and finally, an analysis of policies relating to natural resource management and use across the region.

4. Latin America and the Caribbean

47. The report entitled *Recent Trends in Material Flows and Resource Productivity for Latin America*,³⁰ published by UNEP and the Commonwealth Scientific and Industrial Research Organization (CSIRO), uses standardized material flow accounting methodologies to construct empirical evidence of resource productivity in 10 focus countries in Latin America. The report is based on the database of material flows created to cover the larger countries of Latin America and the Caribbean.³¹ Among other findings, the report provides evidence that resource efficiency (as measured by raw materials extracted per unit of GDP) has declined in the region since 1970, largely because of a massive increase in extractive industries, much of which is destined for export.

5. West Asia

48. The *Arab Region Atlas of Our Changing Environment*³² was launched in Abu Dhabi on 10 December 2013. The atlas examines the environmental changes that have taken place at more than 80 locations across the Arab region, using a combination of on-the-ground photographs and current and historical satellite images, with a narrative based on extensive scientific evidence. "Before-and-after" studies in the atlas clearly demonstrate the pace of development in the region, offering compelling examples of wide-ranging environmental change, including land-use change, urban growth, the degradation of marine and coastal areas, altered hydrology and shrinking water bodies, the loss of habitats and impacts of climate change.

49. The *Arab Millennium Ecosystem Assessment: Synthesis Report* was launched on 7 November 2013 in Cairo. The report represents a synthesis of the findings of the three Millennium Ecosystem subglobal assessments for the Arab region and highlights the commonalities and differences between the sites and the manner in which they relate to the national, regional and global ecosystems. The report indicates that ecosystems in the Arab region are subject to rapid depletion, posing a significant challenge to the sustainability of future generations. The common ecosystem services in the three assessments include water, agriculture, the grazing and raising of cattle, the cultivation of aromatic and medicinal plants, and biodiversity. Achieving the sustainable management of ecosystems requires a number of interventions, including the sustainable use of ecosystems, empowering human capital and providing leadership, institutional reform, and innovation through knowledge sharing, reshaping

³⁰ Available at: www.pnuma.org/english/comunicados/2013/20130619/index.php.

³¹ Available at: www.ces.csiro.au/forms/form-mf-la-start.aspx.

³² See <http://na.unep.net/atlas/viewAtlasBookWithID.php?atlasID=2447>.

traditional approaches, progressive environmental governance, creative solutions, and the sharing of best practices.

50. The report entitled *Vulnerability Assessment of Freshwater Resources to Climate Change: Implications for Shared Water Resources in the West Asia Region*,³³ an assessment prepared in cooperation with the Arabian Gulf University, the Arab Centre for the Study of Arid Zones and Dry Lands (ACSAD), and the Centre for Environment and Development for the Arab Region and Europe (CEDARE). The assessment provides a better understanding of the vulnerability of freshwater resources to threats and the impact of this vulnerability on development options, human well-being and the environment. It identifies the potential impacts of climate change on water resources in the region and assesses the current adaptive capacity of the water sector. It also provides decision makers with strategic responses and policy options to improve water resource management, including adaptation measures. Water stress in West Asia is expected to deepen under the impact of climate change and will remain a major constraint to social and economic development. Understanding the vulnerability of water systems in West Asia, therefore, is vital for sustainable water resource management in the region. The assessment concludes that political action is needed to ensure the sustainable management of water resources, with vulnerability and adaptation to climate change integrated into future national plans. It recommends that resource management policies shift to demand management, water-use efficiency and conservation.

51. A comprehensive scientific assessment of coastal ecosystem carbon and ecosystem services values in Abu Dhabi was carried out under the special initiative on oceans and blue carbon, adopted by the Eye on Earth Summit in Abu Dhabi in December 2011. This was the first time that an assessment of this type had been carried out in the region, and the scientific findings show that Abu Dhabi's coastal ecosystems store significant amounts of carbon that would be emitted if they are degraded. Carbon stocks in coastal ecosystems are the largest of any ecosystem in the Emirate, although on a global scale they are at the low end of the spectrum. Wider ecosystem services, including shoreline buffering, erosion control, water quality maintenance, support to fisheries, tourism and recreation, were found to be more valuable at local scales than carbon, with cultural values attached to mangroves being especially high.³⁴

III. Early warning of environmental threats and emerging issues

52. The UNEP mechanism for identifying, selecting and communicating early warning information on emerging issues to decision makers across the UNEP focus areas, the Global Environmental Alert Service (GEAS), focuses on identifying and communicating emerging environmental issues to raise public awareness. GEAS takes the pulse of the planet and enhances the ability of UNEP to provide regular, science-based updates to its member States, allowing them to make informed policy choices against expected adverse impacts on the well-being of people and on the services that different ecosystems provide. It continuously scans the scientific literature and analyses the results of earth observations and other data sources to produce easily understandable alerts, focusing on policy-relevant environmental hotspots, environmental science, and near real-time environmental hazards. GEAS communicates the emerging scientific findings on the status and trends of the global environment in an appropriate and accessible way to policymakers, the international community, humanitarian groups, civil society and the media.

53. The global readership of GEAS has grown significantly, as demonstrated by an increase in the number of web visits and the download statistics. Circulated every month to a list of over 500,000 users globally, GEAS bulletins include new visual evidence of global environmental change resulting from natural processes and human activities and the interaction between them.³⁵ The GEAS change studies are described and analysed through photographs, satellite images, maps and narratives that provide an insight into the many ways and places in which the environment has changed and continues to be modified. GEAS has been referenced in scientific journal articles and newspapers and its materials are regularly published in the journal *Environmental Development*.

54. UNEP will provide the global community with access to dynamic, compelling, easy-to-understand and policy-relevant information about environmental changes as they occur, with the goal of mitigating environmental harm through e-books and near-real-time data and information updates.

³³ See http://www.unep.org/dewa/Portals/67/pdf/Freshwater_vulnerability_Report_HR.pdf.

³⁴ See <http://grida.no/publications/abu-dhabi-blue-carbon>.

³⁵ Titles of recent bulletins and response actions may be found at <http://na.unep.net/geas/index.php>.

55. Emerging environment issues have been brought to the attention of decision makers on a regular basis through the UNEP Year Book series, on emerging issues in the global environment. A decade ago, UNEP launched the Year Book series, with a focus on the issue of excess nitrogen and dead zones in the 2003 report. Today, the tenth edition, the *UNEP Year Book 2014*, takes the form of a special anniversary edition, revisiting key emerging environmental issues that were highlighted in the series over the past decade. These include such topics as excess nitrogen, emerging infectious diseases, plastic debris in the ocean, and rapid change in the Arctic. For each topic, a succinct synopsis of the situation is provided, followed by an overview of new scientific evidence and key developments since the issue was published by UNEP. Examples of successful efforts by stakeholders are given, directly highlighting the work of partners, and options for actions are presented for consideration by decision makers. To embrace the opportunities provided by new technology and by the launch of the UNEP web-based platform UNEP Live to reach much wider audiences, the UNEP Year Book 2014 has been prepared as an e-book and in a web-based form, and includes videos explaining the issues, interactive graphs showing trends, interviews with experts and live links to data sources, articles and relevant knowledge providers. The overall findings show that, in many cases, issues from the past persist today despite better scientific understanding and a multitude of actions undertaken by various stakeholders in response to them.

IV. Conclusion

56. As the international community lays the foundations for a post-2015 sustainable development agenda, there is abundant evidence that the Earth's systems are changing, moving us closer to alarming thresholds. Environmental degradation and widespread changes resulting from human activity, combined with natural processes and the loss of ecosystem services, constitute barriers to the attainment of internationally agreed development goals.

57. The scientific community is being asked to synthesize the latest information on environmental systems in order to respond to a growing number of key environmental challenges facing society at large on all scales, from global to local, arising from a changing Earth system. The knowledge gathered by UNEP, based on data and information on broad geographical and temporal scales, now needs to be processed through the prism of a variety of scientific disciplines. The goal set before policymakers now is to use this knowledge in a dynamic, multidirectional, scientific, social and economic policy process, to inform people about the risks, opportunities and choices that exist, rather than to advocate any particular management solution.



Distr.: General

12 April 2014

Original: English



**United Nations
Environment Assembly of the
United Nations Environment
Programme**

**United Nations Environment Assembly of the
United Nations Environment Programme**

First session

Nairobi, 23–27 June 2014

Item 5 (a) of the provisional agenda*

Policy issues: state of the environment

State of the environment

**Support structures and processes for keeping the world environment
situation under review, including progress on UNEP Live**

Report of the Executive Director

Summary

The outcome document of the United Nations Conference on Sustainable Development, “The future we want”, provides strategic guidance on the key actions needed to advance the integration of the three dimensions of sustainable development. The present report reviews progress achieved by UNEP on these actions. In response to Governing Council decision 27/11, the report summarizes recent progress in the development of the UNEP knowledge management platform, UNEP Live. A proposal for a staged approach is presented for the production of the next report in the Global Environment Outlook series, GEO-6. The status of various assessment processes, platforms and networks is also reviewed, including the Global Sustainable Development Report, the United Nations World Oceans Assessment, the Intergovernmental Science-Policy Platform for Biodiversity and Ecosystems Services, the Eye on Earth network, the Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA) and the Global Environment Monitoring System Water Programme (GEMS/Water). More detailed information on these initiatives is presented in various information documents.

* UNEP/EA.1/1.

I. Background

1. Assessment processes constitute the fundamental building blocks that support the core mandate of the United Nations Environment Programme (UNEP) to keep the world environment situation under review. They must, however, be underpinned by credible science, institutional networks, partnerships and multi-stakeholder collaborative mechanisms, which provide a number of support functions, such as catalysing data flows, and facilitating access to and the sharing of environmental information. Collectively, these structures and functions support various levels of decision-making, from global to local, and set priorities for technology support and capacity-building interventions.
2. The outcome document of the 2012 United Nations Conference on Sustainable Development, "The future we want", reiterated the importance of information access, data sharing, and the role of the Global Environment Outlook in bringing together information and assessment in support of informed decision-making.¹ In addition, the need to disseminate and share evidence-based environmental information and to raise public awareness on critical and also emerging environmental issues is highlighted in paragraph 88 (e) of the outcome document. The importance of technology support and capacity-building are emphasized in paragraph 88 (f).
3. "The future we want" contains five references (paragraphs 48, 76 (g), 85 (k), 88 (d) and 276) to the need to promote and strengthen the science-policy interface and, in paragraph 88 (d), UNEP is called upon to take action. In response to this request, a report on actions being taken by UNEP to strengthen the science-policy interface and to report on critical gaps is contained in the report of the Executive Director (UNEP/EA.1/2/Add.1).
4. The role of the Global Environment Outlook process in strengthening the science-policy interface is also cited in paragraph 88 (d). Since 1997, UNEP has published five reports in the Global Environment Outlook series. These reports have followed a two-five year cycle and the production process has been expensive, cumbersome and complex, with consequent difficulties in maintaining continuity from one report to the next. The development of the web-based platform UNEP Live presents an opportunity for a more dynamic approach by providing global services combined with regional, national and local data. These may be used to identify key and emerging environmental issues and to support the development of integrated assessments and policy analysis on the state of global, regional and local environments. A staged approach will therefore be adopted for the production of the sixth report in the Global Environment Outlook series, GEO-6. Although the Global Environment Outlook follows a five-year cycle, the establishment of the United Nations Environment Assembly provides an opportunity to provide direction on the production process and cycle of the Global Environment Outlook reports to ensure more frequent and regular updating. The present report presents an outline of this approach as applied to the production of GEO-6.
5. In response to Governing Council decisions 25/2, 26/2 and 27/11, UNEP is developing, in collaboration with a wide array of partners, a web-based knowledge management platform called UNEP Live to promote access to, and to use, environmental information in support of the core mandate of UNEP of keeping the world environmental situation under review.² The present report updates the progress made since the twenty-seventh session of the UNEP Governing Council in the development of UNEP Live.
6. Paragraph 85 (k) of "The future we want" refers to strengthening the science-policy interface in the context of the high-level forum, where one of its functions could be to strengthen the science-policy interface through a review of documentation bringing together dispersed information

¹ In paragraph 88 (d), member States call upon a strengthened and upgraded UNEP to promote a strong science-policy interface, building on existing international instruments, assessments, panels and information networks, including the Global Environment Outlook, as one of the processes aimed at bringing together information and assessment to support informed decision-making.

² In decision 25/2, the Governing Council requested the Executive Director to elaborate further on the requirements for a migration to targeted assessments on thematic priority areas supported by a UNEP Live enabling framework and to report thereon to the Governing Council at its twenty-sixth session in 2011. In decision 26/2, the Council requested UNEP, among other things, to present the pilot proof-of-concept phase of a UNEP Live platform consisting of an interactive web application with supporting data management capacities able to present historical near-real-time data and indicators on a limited number of environmental themes to the Governing Council at its twelfth special session, in 2012. In decision 27/11, the Council requested the Executive Director to implement the next phase of UNEP Live during the biennium 2014–2015 as an open platform in continued alignment with relevant environmental information systems designed for global, regional and national environmental assessment and data sharing.

and assessments, including in the form of a global sustainable development report, building on existing assessments. Plans by UNEP to contribute to the planned global sustainable development outlook report are also outlined in the present document.

7. Currently, a number of parallel assessment processes, platforms and networking initiatives are under way which are complementary to UNEP Live and these are described briefly in the report with more detailed information provided in the following information documents:

- (a) Note by the secretariat on the Eye on Earth initiative (UNEP/EA.1/INF/11);
- (b) Note by the secretariat on the Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA) (UNEP/EA.1/INF/12);
- (c) Note by the secretariat on the GEMS/Water programme: status report and pathways to the future (UNEP/EA.1/INF/13);
- (d) Note by the secretariat on proposed procedures to enhance future assessment processes (UNEP/EA.1/INF/14).

II. UNEP Live

8. UNEP Live³ is designed to support the United Nations Environment Assembly in keeping the environment under review. It serves as the organization's knowledge management platform, using global services combined with regional, national and local data to identify key and emerging environmental issues and to support the development of integrated assessments and policy analysis on the state of global, regional and local environments. It provides tools for data visualization, mapping and comparisons to enable users to combine data, create maps and publish and track the effective use of their findings.

9. The core principles of UNEP Live include, first, open access to data from a wide array of sources including governments, research programmes, civil society, communities of practice and traditional knowledge; second, the sharing of data once collected for multiple uses; third, responsible management of data and information at source; fourth, the archiving and tracking of the use of data and information; and, fifth, access by citizens to data and information through multiple means.

10. The foundations of the UNEP Live implementation programme are built on partnerships and networks to support policy analysis and assessments. UNEP works with countries and key partners within and outside the United Nations to build capacity, broker access to data and information and develop global regional and national perspectives. UNEP Live is being developed as a United Nations system-wide tool for tracking the effectiveness of United Nations environment-related activities, projects and investments around the world.

11. UNEP Live will support the monitoring, reporting and verification of data globally for countries and regions. In dialogue with UNEP member States, regional organizations and multilateral environmental agreements, these processes will be streamlined. UNEP Live will make available online national reporting toolkits to help governments collect, analyse and publish environmental information quickly and easily.

12. UNEP will organize regional user conferences in each region over the biennium to boost progress in data-sharing, knowledge-building and assessments, support technical development and capacity-building and facilitate environmental priority-setting.

13. A technical release of the UNEP Live platform took place on 16 January 2014 in Geneva, at the tenth plenary session of the Group on Earth Observations. The platform currently contains country and global statistics from the Statistics Division and the UNEP Environmental Data Explorer; charts and maps sourced from the United Nations and other sources; UNEP resources such as publications and links to the Economics of Ecosystems and Biodiversity (TEEB) initiative, the United Nations information portal on multilateral environmental agreements (InforMEA) and UNEP project information.

14. It also highlights several areas of particular concern, including the Arctic region, and the air quality-health-climate change nexus, including links to live data and relevant resources. The first phase of the UNEP Live platform will include showcases on such topics as oceans, with analysis for climate prediction, regional seas, forest watch and the tracking of environmental change at key hotspots around the world.

³ See www.unep.org/uneplive.

15. The "My UNEP Live" page includes access to base maps that allow users to add their own data and create charts and maps that can be saved and published.

16. During the first phase of the platform, countries will have the opportunity to store and publish data and to decide which data to make available through UNEP Live. This will be pilot-tested with three or four countries. During this phase, UNEP will be contacting countries, through the UNEP regional offices, to ensure that relevant and up-to-date information and data can be made available on the platform. The goal is to have all United Nations Environment Assembly countries active within UNEP Live by the end of the biennium 2014–2015.

III. Intergovernmental and multi-stakeholder processes, platforms and networks

17. Assessment processes constitute the fundamental building blocks that support UNEP in its core mandate of keeping the world environmental situation under review. The present section provides a status report on a number of processes, platforms and networks currently under development.

A. Multi-stakeholder assessment processes

18. The aim of a multi-stakeholder assessment process is to promote better decision-making by ensuring that the views of the main actors concerned about a particular issue are heard and integrated at all stages through dialogue and consensus-building. The process takes the view that everyone involved has a valid view and relevant knowledge and experience to contribute to the making of decisions. Stakeholders have a greater sense of ownership of the assessment. Legitimacy, policy relevance, saliency and credibility are core characteristics of an assessment. Transparent and rigorous peer review is necessary to ensure the highest possible level of scientific credibility.

1. GEO-6: process and production elements

19. Following Governing Council decision 27/11, the Secretariat is moving forward with a design that takes into account the recent progress in UNEP Live, the UNEP programme of work and budget, greater use of national, subregional and regional data, research and assessments, the availability of new environmental global data sets from the Group on Earth Observations, and the requirement for GEO-6 to be an intergovernmental and multi-stakeholder process.

20. GEO-6 will report on the state and trends of the global environment, document progress towards meeting internationally agreed goals, provide an analysis of emerging issues and include examples of policy-relevant analysis. The report will draw on the findings of major global assessments, including the environmental assessment of small island developing States (GEO-SIDS); the Global Gender and Environment Outlook reporting process; the fourth report in the Global Biodiversity Outlook series; the Global Waste Management Outlook document; the Global Chemicals Outlook report; and the assessments of the Intergovernmental Panel on Climate Change (IPCC), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and the International Resource Panel (IRP).

21. GEO-6 will be produced through a staged approach. The first stage involves an undertaking by countries to publish their national data in UNEP Live, including developing capacity to report on environmental information; the second stage will include a global intergovernmental and multi-stakeholder consultation to agree on the objectives, scope and process for GEO-6 and the nomination of advisory bodies and experts; the third stage will comprise the production of regional assessments based on an intergovernmental multi-stakeholder process in each of the six UNEP regions; and the fourth stage involves the production of a global report overseen by an independent expert scientific advisory panel and an intergovernmental negotiated summary for policymakers developed by a high-level intergovernmental and stakeholder group. These stages will run partly in parallel to ensure the delivery of the key findings of GEO-6 in time for endorsement at the second session of the United Nations Environment Assembly.

22. The four key stages of the proposed process and production elements are outlined in table 1 below.

Table 1
GEO-6 production stages

Date	Activity (2014, 2015, 2016)
Stage 1 Engagement of countries in UNEP Live	
January 2014 onwards	Deployment of national reporting toolkits and capacity-building using UNEP Live – for ministries working with UNEP to support open access to data and information, to produce indicators and assessments and to publish through UNEP Live.
Stage 2 Consultation, nominations and advisory bodies	
April–September 2014	Nominations are invited from Governments and stakeholders for the independent scientific advisory panel, whose role is to guide the assessment processes to ensure the scientific credibility and data quality of the global report. Nominations are invited from Governments and stakeholders for experts in all relevant spheres (e.g., authors, data analysis, reviewers) to work on the regional assessments and the global report. Nominations are invited from Governments and stakeholders for the high-level intergovernmental and stakeholder group; the group will prepare the summary for policymakers to ensure policy relevance.
September 2014	Global intergovernmental and multi-stakeholder consultation: To agree on the scope, design, objectives of GEO-6. Includes Governments, major groups and stakeholders, and United Nations agencies, funds and programmes.
Stage 3 Regional consultations and production of GEO regional assessments	
2014–2015	Regional environmental information network meetings to build capacity for the GEO assessments and UNEP Live data and analysis platform: Tentative dates – Latin America and the Caribbean (2014); West Asia (2014); Asia and the Pacific (2015); Africa (2015); Eastern Europe, Caucasus and Central Asia (2015); North America (2015); to coincide with key meetings of the relevant environmental information and observation networks. Preparation of regional assessments covering state, trends, outlooks, emerging issues and progress towards meeting internationally agreed goals. Conducted in line with regionally agreed priorities in relevant regional ministerial forums.
Stage 4 Production of the global report and summary for policymakers	
October 2014–September 2015	Thematic inputs to the global report taken from the UNEP programme of work and external sources, including: Global Biodiversity Outlook; Global Gender and Environment Outlook; Global Waste Management Outlook; Global Chemicals Outlook; assessments of IPCC, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and IRP; World Oceans Assessment; protected areas monitoring coverage; adaptations gap pilot report; emissions gap; World Water Quality Assessment; regional black carbon assessments; global transboundary waters assessment of five water systems; global assessment report on disaster risk reduction. Preparation of the global report by nominated experts; elements to include: • Findings of the regional assessments • Integrated environmental assessment, relevant for policymakers • Analysis of progress towards meeting internationally agreed goals • Major emerging environmental issues • Gap analysis of data, information and assessments • Policy options

<i>Date</i>	<i>Activity (2014, 2015, 2016)</i>
September–December 2015	Intergovernmental review of the global report. Scientific advisory panel to guide the process to ensure scientific credibility and data quality of the global report. Peer review of the global report to be undertaken by Governments and nominated experts. Peer-reviewed key findings made available for the summary for policymakers.
January 2016	High-level intergovernmental and stakeholder group meeting to prepare a summary for policymakers based on key global findings.
March 2016 open-ended CPR	GEO-6 summary for policymakers presented for discussion and negotiation.
June 2016 UNEA 2	GEO-6 key findings presented to the United Nations Environment Assembly.
June–December 2016	Production of the global report and associated products, translation, and outreach.

23. The cost of producing GEO-6 is estimated at \$7 million, of which \$4.3 million is expected to come from core funds and \$2.7 million from extrabudgetary sources. The main cost components are outlined in table 2 below.

Table 2

GEO-6 budget

(United States dollars)

<i>Activity (2014, 2015, 2016)</i>	<i>Cost</i>
Intergovernmental and multi-stakeholder consultation	450 000
Scientific advisory panel	150 000
High-level intergovernmental and stakeholder group	150 000
Content development	1 000 000
Six regional networking conferences	1 500 000
Capacity development	750 000
Country data flows and indicators delivered and published through UNEP Live	2 000 000
Production, translation, outreach, communication	1 000 000
Total	7 000 000

24. In order to improve the transparency, legitimacy and scientific credibility of GEO-6, peer reviews of all outputs, including the regional assessments and global analyses and reports, will be undertaken through intergovernmental and multi-stakeholder processes. Building on best practices, the secretariat will develop a set of transparent procedures, in particular with regard to administrative processes, the selection of participants, and the inclusion of diverging viewpoints and government and peer reviews, to support the production of regional and global assessments.

25. The secretariat will seek nominations from Governments and invite relevant stakeholders to present names of experts for the high-level intergovernmental and stakeholder group responsible for the summary for policymakers and for the scientific advisory panel set up to oversee the preparation of the regional assessments and global report. As GEO-6 products will be targeted at key audiences, it is essential that all outputs be translated into all the official United Nations languages.

2. Global sustainable development report

26. Paragraph 85 (k) of "The future we want" indicates that the high-level forum could strengthen the science-policy interface through the review of documentation, bringing together dispersed information and assessments, including in the form of a global sustainable development report, building on existing assessments. UNEP will contribute to the production of this report by:

- (a) Ensuring that environmental sustainability is fully integrated;
- (b) Assisting with a review of relevant existing assessments and dispersed information;
- (c) Providing reliable, relevant and timely data through UNEP Live;
- (d) Assisting with policy analysis;
- (e) Mobilizing experts and centres of excellence to assist with the drafting of text and rigorous peer review;
- (f) Ensuring that assessment products arising from the Global Environmental Outlook reports are made available to the experts assembling the global sustainable development report.

3. World Oceans Assessment

27. The regular process for global reporting and assessment of the state of the marine environment, including socio-economic aspects, currently referred to as the World Oceans Assessment, is being undertaken in accordance with the implementation modalities endorsed by the General Assembly in resolution 65/37 in response to the recommendations of the Ad Hoc Working Group of the Whole on the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects. With the secretariat (the United Nations Division for Ocean Affairs and the Law of the Sea) and member States implementing the first integrated assessment cycle (2010–2014), UNEP has continued to provide technical and scientific support to the process in the following areas:

- (a) Communication: initial support for the creation of a communications portal for use by the group of experts and member States;
- (b) Assessments: sharing its extensive knowledge gained through the Global Environment Outlook process and in the development of integrated assessments;
- (c) Capacity-building: support to member States in the World Oceans Assessment in the organization and facilitation of regional workshops through the platform of the regional seas conventions and action plans;
- (d) Resource mobilization: engagement with potential donor countries to support the World Oceans Assessment.

28. For the first cycle of the process, six regional workshops have been held through the Regional Seas Conventions and Action Plans to identify capacity-building needs for the World Oceans Assessment in Latin America and the Caribbean, East Asia and the Pacific, the Western Indian Ocean region, the Pacific region, Europe and the South Atlantic region. Capacity-building needs have been identified for each region in terms of the conduct of integrated assessments and the accessibility of data. UNEP is assisting the Regional Seas Conventions and Action Plans in aligning their state of the marine environment reports to the outline of the World Oceans Assessment in order to forge synergies between regional and global processes.

29. The Transboundary Waters Assessment Programme, a project coordinated by UNEP and funded by the Global Environment Facility under its International Waters Portfolio, is in its second phase (2013–2014). Recognizing the value of transboundary water systems and the fact that many of them continue to be degraded and managed in fragmented ways, the Transboundary Waters Assessment Programme aims to provide a baseline assessment to identify and evaluate changes in transboundary water systems caused by human activities and natural processes, and their consequences for dependent human populations. It consists of five independent, indicator-based assessments (groundwater, lake basins, river basins, large marine ecosystems and the open ocean) and the linkages between them, including their socioeconomic and governance-related features. The indicators provide the scientific bases for classifying the ecological status of transboundary water bodies within each water system from least to most degraded, and the vulnerability of dependent human populations to multiple stressors from least to most vulnerable.

4. World Water Quality Assessment

30. The aim of the World Water Quality Assessment⁴ is two-fold: first, to identify current and future problem areas of freshwater quality in surface waters, especially in developing countries; and second, to evaluate policy options for addressing water pollution. The assessment includes a concerted effort with the UNEP Global Environment Monitoring System for Water (GEMS/Water) Programme to extend the existing water quality database to track progress in protecting surface waters, and also to test and use models to evaluate policy measures. The assessment will be carried out in two stages. The first stage (June 2013–May 2015) will set the scene and comprise a preliminary assessment of the current global water quality situation in freshwater bodies using existing data and information. It will identify the data and knowledge gaps to be filled in the next stage of the assessment. The assessment's goals for the first stage are to review the state of water quality in rivers, lakes and reservoirs, in particular in developing countries, with an emphasis on public health issues and the status of the freshwater fishery; and to identify areas already under serious threat from water pollution. The first stage of the assessment is being carried out by the Helmholtz Centre for Environmental Research (UFZ) and the Centre for Environmental Systems Research at the University of Kassel, Germany, together with UNEP, under the umbrella of the United Nations inter-agency coordination mechanism for all freshwater and sanitation-related matters, UN Water.

5. Global Gender and Environment Outlook

31. UNEP has convened an expert scoping consultation meeting on the Global Gender and Environment Outlook to support the preparation of a project document. At the consultation participants discussed the objectives, scope and process for the development of options to be considered in designing and planning the assessment. It is anticipated that the assessment will be launched at the second session of the United Nations Environment Assembly, in 2016.

6. Environmental assessment of small island developing States

32. UNEP is developing an environmental assessment of small island developing States (GEO-SIDS), for all three small island developing State regions, with the use of UNEP Live. UNEP will populate UNEP Live with data on small island developing States, and prepare the GEO-SIDS assessment organized around needs and solutions in an e-book format, to be launched at the third international conference on small island developing States, to be held in September 2014 in Apia.

7. Global Biodiversity Outlook

33. The fourth report in the Global Biodiversity Outlook series (GBO-4) will be a midterm review of implementation of the Strategic Plan for Biodiversity 2011–2020 and of progress towards the Convention on Biological Diversity's Aichi Biodiversity Targets. It will draw upon the latest global indicator information from the Convention and related scenarios and modelling work to provide a picture of recent trends and likely trajectories. It will also draw upon the fourth and fifth series of national reports to the Convention and on the work of the High-level Panel on the Global Assessment of Resources for Implementing the Strategic Plan for Biodiversity 2011–2020, which is being undertaken concurrently. It will address such issues as current progress towards attainment of each of the Aichi Targets and the implications for biodiversity in 2020 and for achieving the Convention's Vision for 2050. It will also discuss the relevance of biodiversity in the United Nations development agenda beyond 2015 and the sustainable development goals.

34. The draft executive summary and technical report for GBO-4 are being prepared for review by parties to the Convention on Biological Diversity, prior to the eighteenth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice in June 2014. GBO-4 will be launched at the twelfth meeting of the Conference of Parties to the Convention on Biological Diversity, to be held in the Republic of Korea in October 2014. The GBO-4 assessment process is being coordinated by the Convention secretariat, working with input from a team of international scientists who are preparing the underlying technical report, to serve as the basis for the GBO-4 report itself. A GBO-4 advisory group, selected through a nominations process, is providing guidance.

8. Global Waste Management Outlook

35. In response to UNEP Governing Council decision 27/12 on chemicals and waste management, the UNEP International Environmental Technology Centre (IETC) and the International Solid Waste Association (ISWA) are developing the Global Waste Management Outlook, an authoritative reference document addressing the global challenges, trends, financial models and policies across the waste sector. The document will focus on the waste management process, placing waste management

⁴ See the World Water Quality Assessment homepage at www.ufz.de/index.php?en=32318.

in the context of such processes as sustainable consumption and production, prevention and minimization and resource efficiency, and trace links to wider environmental policy challenges. It will provide a global analysis and guidance for national policies, in particular in developing countries. It will also cover the policies and instruments in use for waste management and include economic arguments in order to make the business case, addressing the cost of inaction and reviewing win-win situations. The outlook will be developed through a multi-stakeholder process.

B. Platforms

1. UNEP Live

36. The UNEP knowledge management platform, UNEP Live, is described in section II above.

2. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

37. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services⁵ was established in April 2012, and currently has 115 member States. The platform is an independent, intergovernmental body, open to all member countries of the United Nations. UNEP provides secretariat services for the platform, which operates from Bonn, Germany.

38. At its second session, held from 9 to 14 December 2013 in Antalya, Turkey, the Plenary of the Platform adopted a number of key decisions, including:

(a) An initial work programme for the next five years, with strong commitment to its implementation demonstrated by a pledge of \$25.4 million of the total \$43.5 million required. The work programme deliverables include capacity-building, knowledge-generation, assessment and policy support. The conceptual framework of the Platform was also adopted;

(b) Procedures for the nomination and selection of the multidisciplinary expert panel, whose members will be selected for a three-year period at the next session of the Plenary;

(c) A collaborative partnership arrangement with UNEP, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Development Programme (UNDP), which aims to provide a framework for collaboration between those four United Nations bodies and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, by representing the environment; the sciences and education; food and agriculture; and development and capacity-building;

(d) Financial rules for the platform, including agreement that UNEP would establish and manage the Platform trust fund.

C. Networks

1. Eye on Earth

39. As stated in paragraph 76 (g) of "The future we want", one important aspect of strengthening the institutional framework for sustainable development is to promote and facilitate access to reliable, relevant and timely data in areas related to the three dimensions of sustainable development. Paragraph 274 highlights the role of the Eye on Earth network and the Global Earth Observing System of Systems in developing environmental monitoring systems. In its capacity as a "network of networks", however, the Eye on Earth network is an evolving initiative that needs to be regionalized, building on the existing core group of global and regional stakeholders.

40. The communities participating in the first Eye on Earth User Conference in Dublin, from 4 to 6 March 2013, adopted the Dublin Statement, defining the role of the Eye on Earth network: "To facilitate the sharing of environmental, societal and economic data and information, provided by the diversity of knowledge communities, to support sustainable development".

41. At the Conference in Dublin it was also agreed to establish the Eye on Earth Alliance, comprising institutional stakeholders that subscribe to the principles enshrined in the 2011 Eye on Earth Summit Declaration and share a common agenda centred on the achievement of the goal articulated in the Dublin Statement. The alliance will serve as the driving force behind the formation of the broader Eye on Earth network referred to in paragraph 274 of "The future we want". The common agenda of the alliance and the network will address such issues as:

⁵ See www.ipbes.net.

- (a) Enhancing the availability and accessibility of data and information across the three pillars of sustainable development;
- (b) Providing data for the computation of indicators that will measure progress towards the achievement of targets under the sustainable development goals;
- (c) Promoting the role of citizen science for environmental observation and monitoring;
- (d) Implementing Principle 10 of the 1992 Rio Declaration on Environment and Development;
- (e) Underpinning the development of UNEP Live with a global network of data and information providers.

42. The second summit meeting of the Eye on Earth network will be held in Abu Dhabi in 2015. Further information on the network may be found in the note by the secretariat on the Eye on Earth initiative (UNEP/EA.1/INF/11).

2. Programme of Research on Climate Change Vulnerability, Impacts and Adaptation

43. The Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA)⁶ has been developed to remedy the lack of international coordination in research on climate change vulnerability, impacts and adaptation. It identifies research gaps and initiates processes to close them, and is responding to the scientific community's call for a more cohesive and coordinated approach to vulnerability, impact and adaptation research, and the critical need to harmonize, mobilize, and communicate the growing knowledge-base related to this issue. UNEP took the initiative to establish PROVIA and currently provides it with secretariat support. PROVIA serves a new and growing network of scientists, practitioners and decision-makers, working towards identifying research gaps and meeting policy needs in climate change vulnerability, impact and adaptation research, in collaboration with its implementing partners.

44. Two milestone publications were released in 2013. The first is entitled *Research Priorities on Vulnerability, Impacts and Adaptation: Responding to the Climate Change Challenge*.⁷ The analytical content of this work is based on a broad range of sources, including the IPCC Working Group reports, peer-reviewed articles, books, white papers and conference, workshop, and meeting proceedings, presentations and notes. The second publication, *The PROVIA Guidance on Assessing Vulnerability, Impacts and Adaptation to Climate Change*,⁸ sets out the revised guidelines and assessment tools that need to be delivered to Governments, international agencies and individual experts. The publications were presented to Governments and other principal stakeholders on a number of occasions, including at three side events during the nineteenth session of the United Nations Framework Convention on Climate Change, held in Warsaw from 11 to 22 November 2013.

45. At its sixty-fifth session, held in Geneva from 15 to 23 May 2013, the Executive Council of the World Meteorological Organization approved PROVIA as a component of the World Climate Programme (WCP).⁹ PROVIA and the other components of WCP will thus contribute to the implementation of the Global Framework for Climate Services. Accordingly, PROVIA was first considered by the WMO Executive Council Working Group on Climate and Related Weather, Water and Environmental Matters at its session from 10 to 12 December 2013.

46. Strengthening communication within the research community and among adaptation planners is one of the priorities of PROVIA. To that end, PROVIA publishes a quarterly newsletter and maintains a regularly updated website. PROVIA will co-host the third International Climate Change Adaptation Conference in Fortaleza Ceará, Brazil, in May 2014. Further information on may be found in the note by the secretariat on PROVIA (UNEP/EA.1/INF/12).

3. GEMS/Water programme and network

47. "The future we want" emphasizes the urgent need to address water quality and water pollution. Water quality and water pollution issues feature prominently among the proposals for the United Nations development agenda beyond 2015. In this context and in the light of global trends, attention is drawn to the growing need for informed decision-making on water-related risks and their social, economic and welfare-related implications.

⁶ See www.unep.org/provia/HOME/tabid/55173/Default.aspx.

⁷ See www.unep.org/provia/RESOURCES/Publications/ResearchPriorities/tabid/130750/Default.aspx.

⁸ See www.unep.org/provia/RESOURCES/Publications/PROVIAGuidancereport/tabid/130752/Default.aspx.

⁹ Resolution 4.3(2)/1 (EC-65).

48. The GEMS/Water programme provides a global platform for water quality data and information as a central element of the UNEP operational strategy for fresh water (2012–2016). Supported primarily by Environment Canada, up to 31 March 2014, GEMS/Water has provided crucial evidence-based information on global inland water quality, current status and trends. The Irish and German Governments have undertaken to co-host the new GEMS/Water programme. The Government of Brazil has expressed a firm interest in setting up a regional hub for Latin America and the Caribbean and for Portuguese-speaking countries in Africa.

49. As GEMS/Water is metamorphosing into a new business and governance model, its primary objectives are, first, enhancing the global network of countries and institutions committed to providing water-quality-related data and information; second, improving products and services such as decision-support tools, inclusive knowledge management, and multi-scale assessments in national, regional and transboundary domains; third, facilitating the integration of multiple datasets from different sources, including remote sensing and citizens science; fourth, providing science-based policy-relevant information; and, fifth, enhancing water-quality-related capacity development.

50. The implementation of the GEMS/Water programme will provide benefits for member States and the global water community at various levels. National and regional institutions will benefit from capacity development activities and technical advice and support. Decision-making will be better informed, based on robust information leading to social, economic and environmental benefits from more targeted water management. At the global level, GEMS/Water will contribute significantly to the potential inclusion of the implementation of water quality and water-pollution-related targets in the United Nations development agenda beyond 2015.

51. Further information on GEMS/Water may be found in the note by the secretariat (UNEP/EA.1/INF/13).

IV. Technology support and capacity-building

A. Increasing demands from member States

52. In paragraph 278, “The future we want” calls for the continued and focused implementation of the Bali Strategic Plan for Technology Support and Capacity-building, and, in paragraph 88 (f), for reaffirms the mandate and catalytic role of UNEP to continue providing technology support and capacity-building to assist developing countries, particularly in the context of a strengthened and upgraded UNEP. In paragraph 85 (l) the document calls for action to enhance evidence-based decision-making at all levels and contribute to strengthening ongoing efforts of capacity-building for data collection and analysis in developing countries.

53. Increasingly, UNEP is being called upon to support countries in implementing best practices for the regular monitoring and use of data and indicators for environmental reporting. The findings of GEO-5 and many UNEP-led assessments repeatedly highlight the lack of the data and indicators necessary for the assessment of the status of the world environmental situation and for Governments to be able to report on the achievement of agreed goals and environmental agreements. UNEP is taking what might be termed a “collect once, use often” approach as part of the UNEP Live initiative to identify and promote the use of appropriate data and indicators useful for multiple reporting purposes, in an effort to streamline and reduce the reporting burdens experienced by member States.

B. UNEP Live: technology support and capacity-building

54. In decision 27/11, the Governing Council calls upon UNEP to undertake and encourage capacity-building activities to ensure that developing countries and countries with economies in transition are able to work with UNEP Live and contribute to scientifically sound evidence-based environmental assessment processes. In the same decision it also invites member States, major groups and stakeholders and United Nations agencies, funds and programmes to engage in the development of UNEP Live and in particular the implementation of the online state-of-environment reporting capabilities, by increasingly sharing relevant data, information and indicators through open platforms.

55. Member States at the Interregional Preparatory Meeting for the Third International Conference on Small Island Developing States, held in Bridgetown from 26 to 28 August 2013, included in the so-called “zero draft” of the meeting’s outcome document a call for a data revolution in small island developing States, to enable the effective follow-up and evaluation of implementation and to indicate the level of success in attainment of internationally agreed development goals. Among other things, the meeting called for the strengthening of data systems and partnership initiatives, for ownership of data and information to remain the property of the Governments of small island developing States within those regions, called for support in different areas from the United Nations Statistics Division,

UNEP and other United Nations bodies, and called on the international community to assist in the establishment of national and regional information and communication technology platforms and information dissemination hubs in the small island developing States to facilitate information exchange and cooperation between such States, linked with platforms such as the network SIDSNet.

56. As a first step, UNEP, in collaboration with the Environment Agency – Abu Dhabi (EAD), is developing an online national reporting toolkit to help Governments collect, analyse and publish environmental information quickly and easily. The toolkit is currently being tested and a pilot version will be available by mid-2014.

C. New and updated support tools

57. Support is being provided to countries in the West Asia region in the development of national environment outlooks through training in the conduct of integrated environmental assessments and facilitating the development of frameworks for state-of-the-environment reports. The *IEA Resource Book for the Arab Region* was published on the internet in both Arabic and English.

58. In cooperation with the League of Arab States, the Economic and Social Commission for Western Asia (ESCWA), and the Abu Dhabi Global Environment Data Initiative (AGEDI), UNEP has launched online guidelines on the core set of sustainable development indicators for the Arab region, in Arabic and English. To remedy the lack of such indicators, the guidelines show how to develop and use social, environmental and economic indicators for the Arab region.

59. In October 2013, at its thirty-seventh plenary session, held in Batumi, Georgia, IPCC adopted two reports of its task force on national greenhouse gas inventories, namely the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands¹⁰ and the 2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol.¹¹ The former provides countries with additional national-level inventory methodological guidance on wetlands to address the gaps identified in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. The latter responds to an invitation by the parties to the Kyoto Protocol to review and, if necessary, update supplementary methodologies for estimating anthropogenic greenhouse gas emissions by sources and removals by sinks resulting from land use, land-use change and forestry activities.

60. Technical assistance and capacity-building support were provided to Bangladesh, Bhutan, the Democratic People's Republic of Korea, Myanmar, Pakistan and Pacific States using the integrated environmental assessment approach (as set out in the *IEA Training Manual*) to review environmental states and trends and their impacts on human well-being and economic development, with a view to supporting informed decision-making processes at the national level in 2012–2013.

¹⁰ See www.ipcc-nggip.iges.or.jp/home/wetlands.html.

¹¹ See www.ipcc-nggip.iges.or.jp/home/2013KPSupplementaryGuidance_inv.html.